DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-001726
Date Inspected: 20-Mar-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 600
OSM Departure Time: 1730
Location: Shanghai,China

CWI Name: Sun Wei

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☐ Yes	☐ No	☑ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☐ Yes	☑ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG

Summary of Items Observed:

Caltrans Quality Assurance (QA) Inspector Tim McClendon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

The Caltrans QA Inspector observed welding of the Production Monitoring Test (PMT) number 1 for Production Panel DP110-002 and DP326-001 on closed U-rib Partial Joint Penetration (PJP) welds in Bay #1. ZPMC welding personnel performed Gantry Machine, Gas Metal Arc Welding (GMAW) for the root pass and immediately performed Gantry Machine, Submerged Arc Welding (SAW) for the cover/final pass, using gantry machine 1. GMAW and SAW U-rib PJP welds on the PMT were completed and visually inspected prior to the start of the GMAW pass on production deck panel DP110-002. Ultrasonic inspection was performed by both ZPMC's technician and Caltrans inspector, and macro samples were selected by Caltrans inspector prior to the completion of GMAW pass on production deck panel DP110-002. Dual process WPS-B-T-2342-U1 (U-rib)-3 was posted as the Welding procedure specification for closed U-rib welding. The following welders were observed welding the corresponding weld joints for the PMT, weld joint (wj) # 1 was welded by Mr. Chen Jie, wj # 2 was welded by Mr. Xang Jie, wj # 3 was welded by Mr. Gao Xin Dong, wj # 4 was welded by Mr. Jiang Ting Guang, wj # 5 was welded by Mr. Zhang Sheo Hai and wj # 6 was welded by Mr. Xiung Huan Long. Welding operator was Mr. Ban Xiao Hui. The welding variables of the GMAW pass on PMT closed U-ribs PJP welds were observed and recorded for each welder. The following are the minimum and maximum weld parameters that was observed, amperage 340 to 367 voltages 29.6 to 30.0 with a travel speed of 525 mm/min. The welding variables of the SAW pass on PMT closed U-ribs PJP welds were observed and recorded for each welder. The following are the minimum and maximum weld parameters that was observed,, amperage 677 to 686, voltages 24.5 to 25.4 with a

travel speed of 510 mm/min. See photograph below of SAW display which indicates where amperage and voltages values are acquired.

The Caltrans QA Inspector observed ZPMC CWI Sun Wei perform Visual Testing (VT) inspection to approximately 800mm of welded area on this PMT, after this VT inspection the required 500mm sample was chosen. This 500mm sample passed ZPMC's VT inspection, however it should be noted there was approximately 200mm of overlap in a portion that was not chosen. VT inspection was performed by the Caltrans QA Inspector on this 500mm sample chosen by ZPMC and no rejectable indications were found.

The ambient temperature in bay # 1 was recorded at 11 degrees Celsius with the production panel temperature recorded at 14 degrees Celsius prior to welding.

After welding was completed on the PMT, ZPMC personnel performed welding utilizing the GMAW process on Production Panel DP110-002, on U-rib # U31 for wj #1 and wj #2, U-rib # U36 for wj #3 and wj #4, U-rib # U43 for wj #5 and wj #6 and U-rib # U50 for wj #7 and wj #8. The following welders were observed welding production deck plate on closed U-ribs PJP welds, Mr. Chen Jie welded wj #1, Mr. Xang Jie welded wj # 2, Mr. Gao Xin Dong welded wj #3 and wj #5, Mr. Jiang Ting Guang welded wj #4 and wj #6, Mr. Zhang Sheo Hai welded wj #7 and Mr. Xiung Huan Long welded wj #8. The welding variables of the GMAW pass on production panel closed U-ribs PJP welds were observed and recorded for each welder. The following are the minimum and maximum weld parameters that was observed, amperage 344 to 363, voltage 29.7 to 30.8 with a travel speed of 541mm/min.

After completion of the GMAW pass on Production Panel DP110-002, ZPMC personnel performed welding utilizing GMAW process on DP326-001, on U-rib # U53 for wj #1 and wj #2, U-rib # U46 for wj #3 and wj #4, U-rib # U44 for wj #5 and wj #6 and U-rib # U52 for wj #7 and wj #8. The following welders were observed welding production deck plate closed U-ribs PJP welds, Mr. Chen Jie welded wj #8, Mr. Xang Jie welded wj #7 and wj #4, Mr.Jiang Ting Guang welded wj #6 and wj #3, Mr. Gao Xin Dong welded wj #5, Mr. Zhang Sheo Hai welded wj #2 and Mr. Xiung Huan Long welded wj #1. The welding variables of the GMAW pass on production panel closed U-ribs PJP welds were observed and recorded for each welder. The following are the minimum and maximum weld parameters that was observed, amperage 354 to 364, voltage 30.1 to 31.5 with a travel speed of 529mm/min.

After completion of the GMAW on Production Panel DP326-001, ZPMC personnel performed welding utilizing SAW process on Production Panel DP110-002. The following welders were observed welding production deck plate closed U-ribs PJP welds, Mr. Chen Jie welded wj #1, Mr. Xang Jie welded wj #2, Mr. Gao Xin Dong welded wj #3 and wj #5, Mr. Jiang Ting Guang welded wj #4 and wj #6, Mr. Zhang Sheo Hai welded wj #7 and Mr. Xiung Huan Long welded wj #8. The welding variables of the SAW pass on production panel closed U-ribs PJP welds were observed and recorded for each welder. The following are the minimum and maximum weld parameters that was observed, amperage 671 to 682, voltage 24.8 to 25.7 with a travel speed of 510mm/min.

After completion of the SAW pass on Production Panel DP110-002, ZPMC personnel performed welding, utilizing SAW process on DP326-001. The following welders were observed welding production deck plate closed U-ribs PJP welds, Mr. Chen Jie welded wj #8, Mr. Xang Jie welded wj #7 and wj #4, Mr.Jiang Ting Guang welded wj #6 and wj #3, Mr. Gao Xin Dong welded wj #5, Mr. Zhang Sheo Hai welded wj # 2 and Mr. Xiung Huan Long

welded wj #1. The welding variables of the SAW pass on production panel closed U-ribs PJP welds were observed and recorded for each welder. The following are the minimum and maximum weld parameters that was observed, amperage 673 to 680, voltage 24.8 to 26.0 with a travel speed of 520mm/min.

Caltrans representatives observed rust areas tears and fins on weld joints prior to GMAW welding. Areas were shown to ZPMC personnel prior to welding.

Summary of Conversations:

No relevant conversations spoken on this date.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Pat Lowry, (858) 344-2712, who represents the Office of Structural Materials for your project.

Inspected By:	McClendon,Timothy	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer